NOTICE

All drawings located at the end of the document.

KAISER•HILL
COMPANY

Industrial Area
Sampling and Analysis Plan
FY04 Addendum #IA-04-14
IHSS Group 400-4

April 2004

1/15

Industrial Area
Sampling and Analysis Plan
FY04 Addendum #IA-04-14
IHSS Group 400-4

April 2004

2

Industrial Area
Sampling and Analysis Plan
FY04 Addendum #IA-04-14
IHSS Group 400-4

Approval received from the Colorado Department of Public Health and Environment

April 30, 2004

Approval letter contained in the Administrative Record

April 2004

3

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

4

ACRONYMS

AL	action level
bgs	below ground surface
DOE	U S Department of Energy
HPGe	high-purity germanium
HRR	Historical Release Report
IA	Industrial Area
IASAP	Industrial Area Sampling and Analysis Plan
IHSS	Individual Hazardous Substance Site
MDL	method detection limit
µg/kg	micrograms per kilogram
mg/kg	milligrams per kilogram
NFAA	no further accelerated action
NA	not applicable
OPWL	Original Process Waste Lines
PAC	Potential Area of Concern
pCi/g	picocuries per gram
PCOC	potential contaminant of concern
RL	reporting limit
SAP	Sampling and Analysis Plan
Sbd	sample begin depth
Sed	sample end depth
SWD	Soil Water Database
SVOC	semivolatile organic compound
UBC	Under Building Contamination
VOC	volatile organic compound
WRW	wildlife refuge worker

5

1.0 INTRODUCTION

This Industrial Area (IA) Sampling and Analysis Plan (SAP) (IASAP) (DOE 2001) Addendum #IA-04-14 includes Individual Hazardous Substance Site (IHSS) Group-specific information, sampling locations, and potential contaminants of concern (PCOCs) for Potential Areas of Concern (PACs) proposed for characterization This IASAP Addendum is a supplement to the IASAP (DOE 2001) and includes data and proposed sampling locations for IHSS Group 400-4 and associated PACs listed in Table 1 The locations of the IHSS Group and the PACs within the IHSS Group are shown on Figure 1 The PCOCs, listed by PAC, are identified in Table 2 and include radionuclides, metals, and semivolatile organic compounds (SVOCs)

Table 1
IASAP Addendum #IA-04-14 IHSS Group

IHSS Group	IHSS/PAC/UBC Site
400-4	PAC 400-803 – Miscellaneous Dumping, Building 460 Storm Drain
	PAC 400-804 – Road North of Building 460

Table 2
PCOCs at IHSS Group 400-4

IHSS Group	IHSS/PAC/UBC Site	PCOCs	Media	Data Source	Sampling Location Method
400-4	PAC 400-803 – Miscellaneous Dumping, Building 460 Storm Drain	Radionuclides Metals SVOCs	Surface soil Subsurface soil	HRRs (DOE 1992-2003) Process knowledge (IASAP [DOE 2001])	Biased
	PAC 400-804 – Road North of Building 460	Radionuclides	Surface soil	HRRs (DOE 1992-2003) Process knowledge (IASAP [DOE 2001])	Statistical (will be moved in the field to target release)

6

2.0 IHSS GROUP 400-4

2.1 Existing Characterization Information

Existing concentrations and activities greater than background means plus two standard deviations, or method detection limits (MDLs) for existing data and reporting limits (RLs) for data collected as part of previous accelerated actions, are presented on Figures 2 and 3 These figures illustrate sampling results for surface and subsurface soils, respectively, within a 50-foot buffer surrounding IHSS Group 400-4 The predominant analyte groups that were detected above background means plus two standard deviations or MDLs/RLs on both figures are metals, radionuclides, and SVOCs Volatile organic compounds (VOCs) were also detected but at very low concentrations

Existing information and data for these PACs are available in Appendix C of the IASAP (DOE 2001), the Historical Release Reports (HRRs) (DOE 1992-2003), and the IA Data Summary Report (DOE 2000) Current data for accelerated actions are found in the Soil Water Database (SWD)

2.2 Proposed Sampling and Analysis

The proposed sampling and analysis specifications (number and types of samples) for IHSS Group 400-4 are summarized in Tables 3 and 4 Proposed new sampling locations are the starting point for IHSS Group characterization After characterization starts, the number and type of samples may change based on sampling results Changes to sampling and analysis specifications will be considered in consultation with the regulatory agencies

Table 3
IHSS Group 400-4 Sampling and Analysis Summary

Category	Total
Number of Sampling Locations	8
Total Number of Samples	8
Number of Radionuclide Analyses	8
Number Metal Analyses	6
Number of SVOC Analyses	6

8

Table 4
Sampling and Analysis Specifications for IHSS Group 400-4

IHSS Group	IHSS/PAC/UBC Site	Location Code	Easting	Northing	Media	Depth Interval	Analyte	Onsite Laboratory Method	Offsite Laboratory Method
400-4	PAC 400-803 – Miscellaneous Dumping, Building 460 Storm Drain	BX37-024	2082288 850	748946 836	Surface soil	0'-0 5'	Metals	NA	6010
		BX37-024	2082288 850	748946 836	Surface soil	0'-0 5'	Radionuclides	HPGe	Alpha Spec
		BX37-024	2082288 850	748946 836	Surface soil	0'-0 5'	SVOCs	NA	8270
		BY37-030	2082408 208	748954 475	Subsurface soil	0 5'-2 5'	Metals	NA	6010
		BY37-030	2082408 208	748954 475	Subsurface soil	0 5'-2 5'	Radionuclides	HPGe	Alpha Spec
		BY37-030	2082408 208	748954 475	Subsurface soil	0 5'-2 5'	SVOCs	NA	8270
		BZ37-022	2082654 353	748950 746	Surface soil	0'-0 5'	Metals	NA	6010
		BZ37-022	2082654 353	748950 746	Surface soil	0'-0 5'	Radionuclides	HPGe	Alpha Spec
		BZ37-022	2082654 353	748950 746	Surface soil	0'-0 5'	SVOCs	NA	8270
		CA38-023*	2082800 656	748998 399	Surface soil	0'-0 5'	Metals	NA	6010
		CA38-023*	2082800 656	748998 399	Surface soil	0'-0 5'	Radionuclides	HPGe	Alpha Spec
		CA38-023*	2082800 656	748998 399	Surface soil	0'-0 5'	SVOCs	NA	8270

IHSS Group	IHSS/PAC/UBC Site	Location Code	Easting	Northing	Media	Depth Interval	Analyte	Onsite Laboratory Method	Offsite Laboratory Method
		CA38-025*	2082763 030	748997 805	Surface soil	0'-0 5'	Metals	NA	6010
		CA38-025*	2082763 030	748997 805	Surface soil	0'-0 5'	Radionuclides	HPGe	Alpha Spec
		CA38-025*	2082763 030	748997 805	Surface soil	0'-0 5'	SVOCs	NA	8270
		CB38-012*	2083022 752	749026 451	Surface soil	0'-0 5'	Metals	NA	6010
		CB38-012*	2083022 752	749026 451	Surface soil	0'-0 5'	Radionuclides	HPGe	Alpha Spec
		CB38-012*	2083022 752	749026 451	Surface soil	0'-0 5'	SVOCs	NA	8270
	PAC 400-804 – Road North of Building 460	BY38-024**	2082362 666	748982 644	Surface soil	0'-0 5'	Radionuclides	HPGe	Alpha Spec
		BX37-023**	2082335 362	748959 182	Surface soil	0'-0 5'	Radionuclides	HPGe	Alpha Spec

Notes

* Samples were collected on April 14, 2004

** These sample locations will be relocated in the field to target the actual release site

Three types of sampling strategies are used to determine sampling locations statistical, geostatistical, and biased Geostatistical methods were not used to determine sampling locations in this Addendum Statistical grids have computer-generated random start points and orientations Additionally, the grids have been extended outside the PACs to provide additional sampling locations if needed Biased sampling is used to target areas where process knowledge or analytical data suggest there is a high probability of contamination in a limited area

The IASAP 11-meter statistical grid was originally used to determine sampling locations at PAC 400-804, and contains two locations within the PAC boundary (BY38-024 and BX37-023) However, it has been determined that biased sampling for this area will provide a better investigative approach to determine if any residual effects are present from the historical release of ingots to this area Therefore, locations BX37-023 and BY38-024 will be moved in the field based on review of incident photographs to target the actual location of the ingot release

Based on the location of subsurface storm drains associated with the miscellaneous dumping in this area and likelihood of contamination, biased sampling locations were used for characterization of PAC 400-803 PAC 400-803 contains numerous subsurface sections of corrugated metal piping which daylight at various locations along the southern PAC boundary The sampling locations were strategically placed near storm drain inputs and outfalls in order to trace the potential path of contamination The starting point of the drain system begins at a drain located immediately west of Building 446 Surface sampling location BX37-024 will be placed within the drain as the point of entry A subsurface soil sample will be collected from 0 5 feet below ground surface (bgs) to 2 5 feet bgs at location BY37-030 The location will be placed in the approximate area of the historic open ditch along the south side of Cottonwood Avenue This ditch is no longer present as it has been filled and covered with asphalt and/or gravel This sampling location will be moved in the field based on current field conditions and landmarks to target the storm drain outfall to the historic ditch Additional depth intervals will be collected, if necessary, as indicated by field conditions and depth of the storm drain in this area Surface sampling location BZ37-022 will be the downgradient sampling location for the historic open ditch along the south side of Cottonwood Avenue

On April 13, 2003, excavation of Original Process Waste Line (OPWL) P-4, located on the north side of Cottonwood Avenue (north of PAC 400-803) began Sampling locations CA38-023, CA38-025, and CB38-012 were collected on April 14, 2004 in an effort to characterize the storm sewer outfalls and open ditch in this area before further soil disturbance occurred due to the excavation activities

Figure 4 illustrates the locations of the storm drains and associated biased sampling locations near the storm drain inputs and outfalls for PAC 400-803, as well as the two statistical sampling locations for PAC 400-804, which will be relocated in the field based on the location of the historic ingot spill

13

Portions of both PACs are covered with asphalt Samples located in an asphalt-covered area will be collected within native soil beneath any asphalt and road base present

IHSS 157 2, directly adjoining to the south, will be sampled as part of IASAP Addendum #IA-03-14 (IHSS Groups 400-5 and 400-6 [DOE 2003a]) IHSS 160, also directly adjoining to the south, will be sampled as part of IASAP Addendum #IA-03-09 (IHSS Group 600-4 [DOE 2003b])

IHSS 117 3, which is directly adjoining to the northeast, received no further accelerated action (NFAA) approval in 1999 (DOE 1999) and will not be sampled as part of this IASAP Addendum

Two OPWL are present beneath PAC 400-803 Line P-5 runs north to south from Building 444 and is located approximately 4 feet bgs Line P-4 runs east to west, is located approximately 3 5 feet bgs, and crosses the easternmost portion of PAC 400-803 Figure 4 shows the location and approximate depths of the OPWL IHSS Group 400-4 PACs are the result of releases to surface soil, and therefore no OPWL samples will be collected as part of this IASAP Addendum Confirmation samples associated with OPWL removal in this area will be collected as part of the OPWL Notification #03-14 (DOE 2003c)

3.0 REFERENCES

DOE, 1992-2003, Historical Release Reports for the Rocky Flats Plant, Golden, Colorado

DOE, 1999, Historical Release Reports for the Rocky Flats Plant, Golden, Colorado, September

DOE, 2000, Rocky Flats Environmental Technology Site Industrial Area Data Summary Report, Golden, Colorado, September

DOE, 2001, Industrial Area Sampling and Analysis Plan, Rocky Flats Environmental Technology Site, Golden, Colorado, June

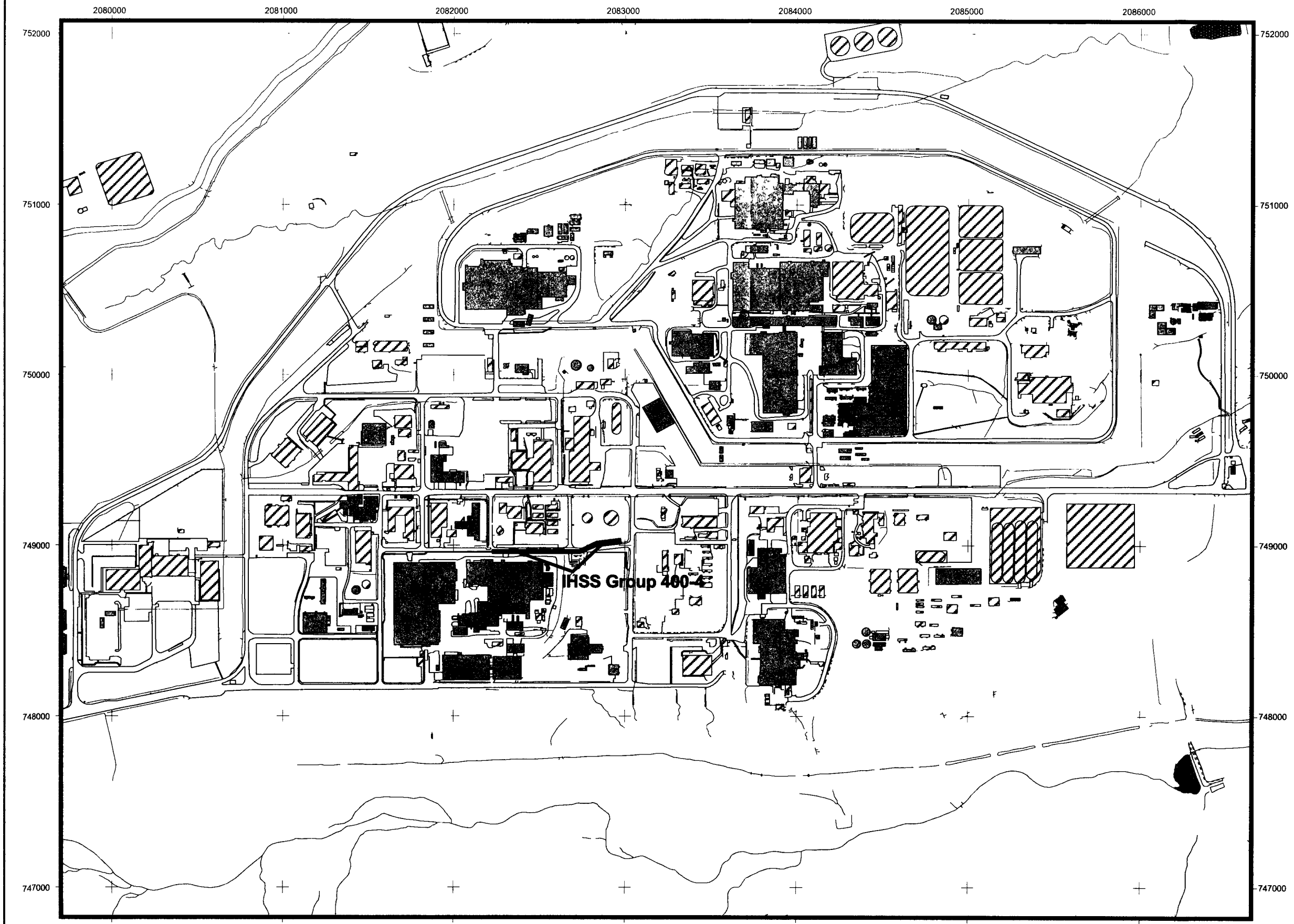
DOE, 2003a, Industrial Area Sampling and Analysis Plan, FY03 Addendum #IA-03-14, IHSS Groups 400-5 and 400-6, Rocky Flats Environmental Technology Site, August

DOE, 2003b, Industrial Area Sampling and Analysis Plan, FY03 Addendum #IA-03-09, IHSS Group 600-4, Rocky Flats Environmental Technology Site, August

DOE, 2003c, Final Industrial Area Sampling and Analysis Plan, FY03 Addendum #IA-03-11, IHSS Group 000-2, Original Process Waste Lines, Rocky Flats Environmental Technology Site, August

15/15

Figure 1
IHSS Group 400-4
Location Map



KEY

- PAC
- Dirt Road
- Paved Road
- Stream
- Lake
- Fence

Structure
- Demolished
- Standing

Disclaimer
Neither the United States Government nor Kaiser-Hill LLC nor CH2M Hill nor any agency thereof nor any of their employees makes any warranty express or implied or assumes any legal liability or responsibility for the accuracy completeness, or usefulness of any information apparatus, product, or process disclosed or represents that its use would not infringe privately owned rights

N
W E

200 0 200 Feet

Scale = 1 7 000

State Plane Coordinate Projection
Colorado Central Zone
Datum NAD 27

U S Department of Energy
Rocky Flats Environmental Technology Site

Prepared by: [redacted] Date April 2004

Prepared for:

KAISER•HILL COMPANY

File: w:\projects\fy2004\400-4\Characterization\SAP\sap 020504.apr

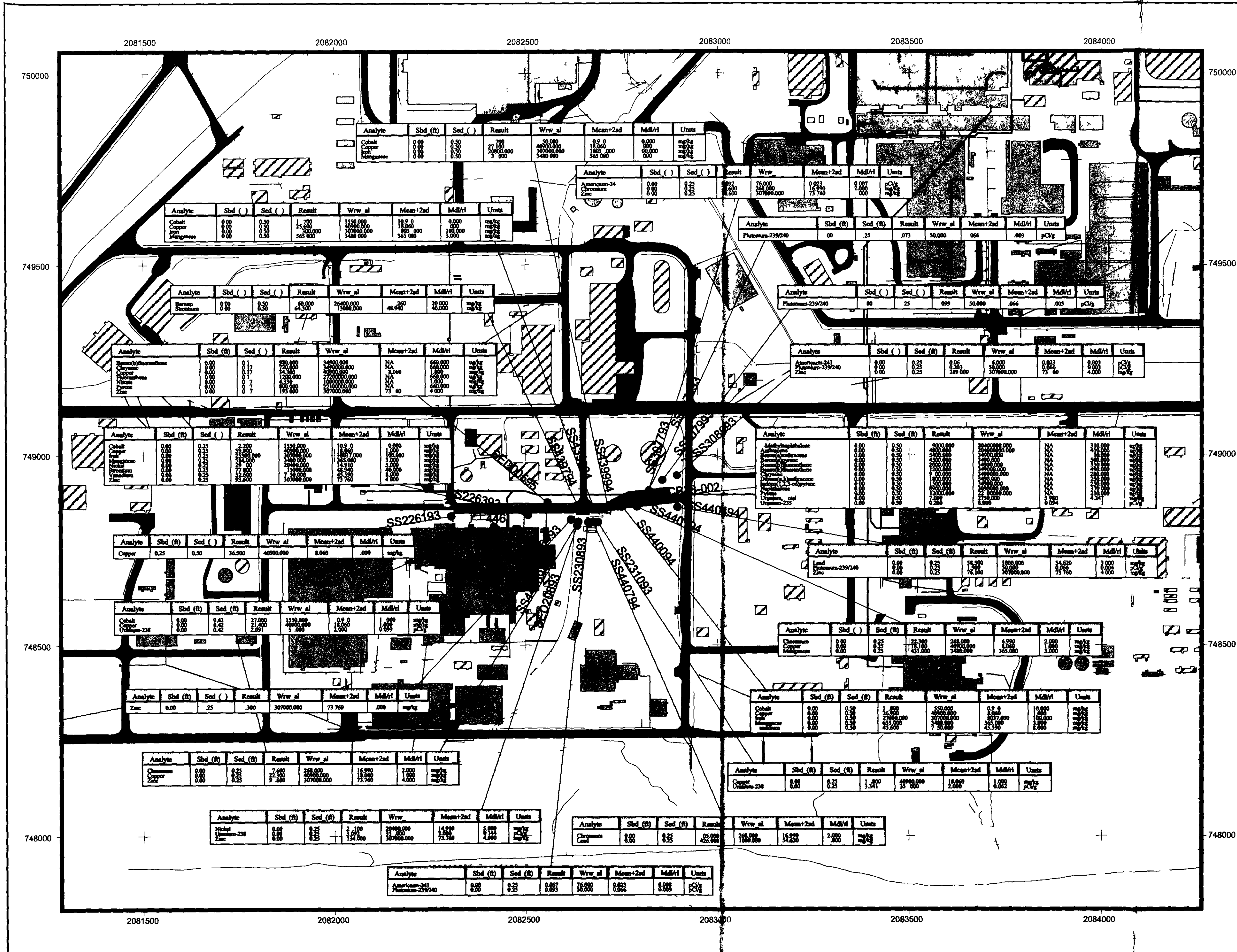


Figure 2
Existing Surface Soil Sample Results Greater Than Background Means Plus Two Standard Deviations or MDLs/RLs

KEY

Sampling Location
- ● Exceeds WRW Action Level
- ● Exceeds Background or MDL/RL

PAC
OPWL
Dirt Road
Stream
Storm Drain
Structure
Demolished
Standing
UBC
Paved Road
Asphalt

Disclaimer
Neither the United States Government nor Kaiser-Hill LLC nor CH2MHill nor any agency thereof nor any of their employees makes any warranty express or implied or assumes any legal liability or responsibility for the accuracy completeness, or usefulness of any formation apparatus, product, or process disclosed or represents that its use would not nfringe privately owned righ

N
W E

200 0 200 400 Feet

Scale = 1 4 000

State Plane Coordinate Projection
Colorado Central Zone
Datum NAD 27

U S Department of Energy
Rocky Flats Environmental Technology Site

Prepared by [redacted] Date April 2004

Prepared for

KAISER◆HILL COMPANY

File w:\projects\fy2004\400-4\Characterization\SAP.apr 020504.apr

7

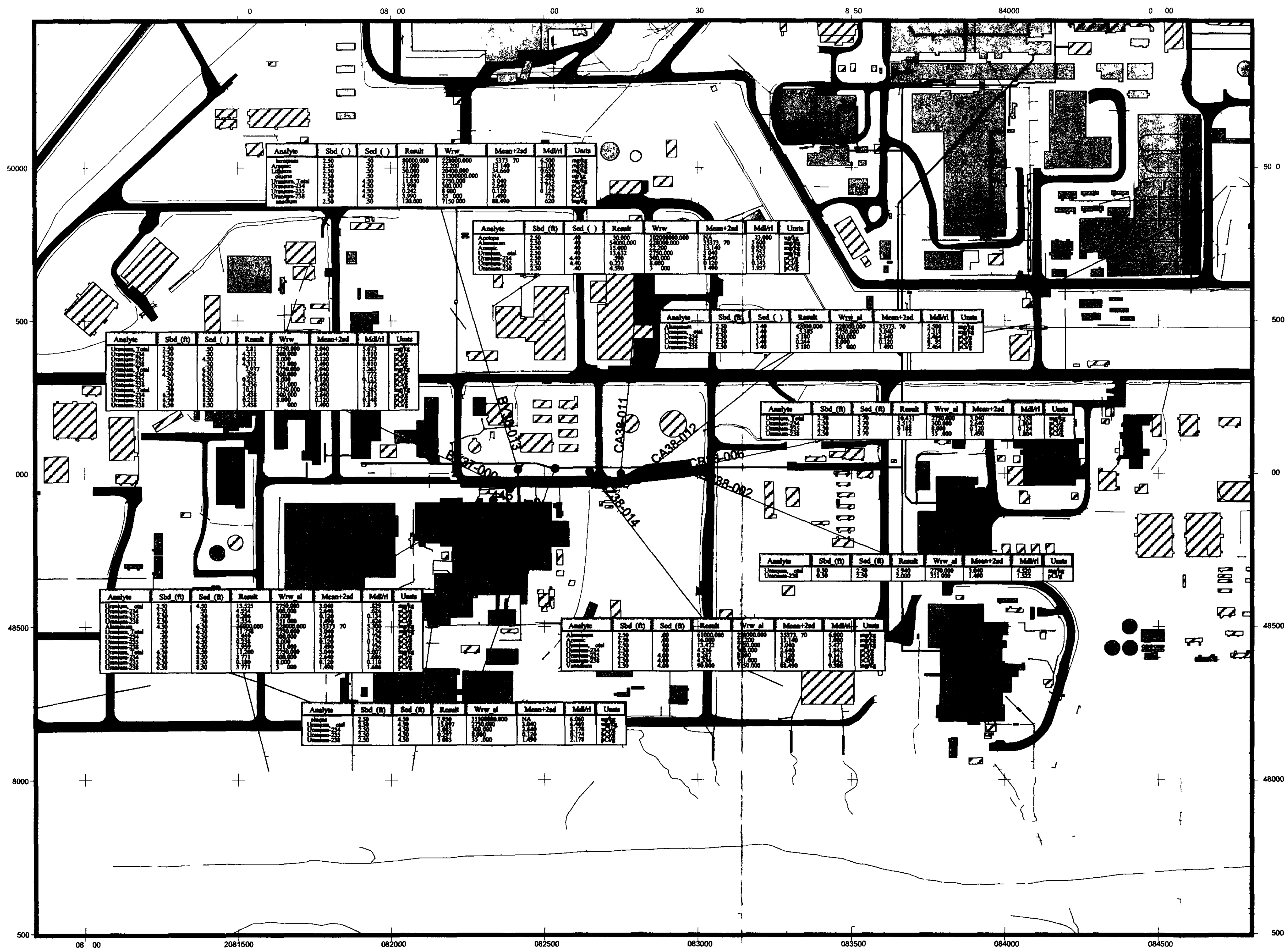


Figure 3
Existing Subsurface Soil Sample Results Greater Than Background Means Plus Two Standard Deviations or MDLs/RLs

KEY

Sampling Location
- Exceeds WRW Action Level
- Exceeds Background or MDL/RL

PAC
OPWL
Dirt Road
Stream
Storm Drain
Structure
Demolished
Standing
UBC
Paved Road
Asphalt

Disclaimer
Neither the United States Government nor Kaiser Hi LLC nor CH2MHill nor any agency thereof nor any of their employees, makes any warranty express or implied or assumes any legal liability or responsibility for the accuracy completeness or usefulness of any formation apparatus, product, or process disclosed or represents that its use would not nfringe privately owned rights

N W E

200 0 200 400 Feet

Scale = 1 4 000

State Plane Coordinate Projection
Colorado Central Zone
Datum NAD 27

U S Department of Energy
Rocky Flats Environmental Technology Site

Prepared by [redacted] Date April 2004

Prepared for

KAISER◆HILL COMPANY

File w:\projects\fy2004\400-4\Characterization\SAP\sap 020504.apr

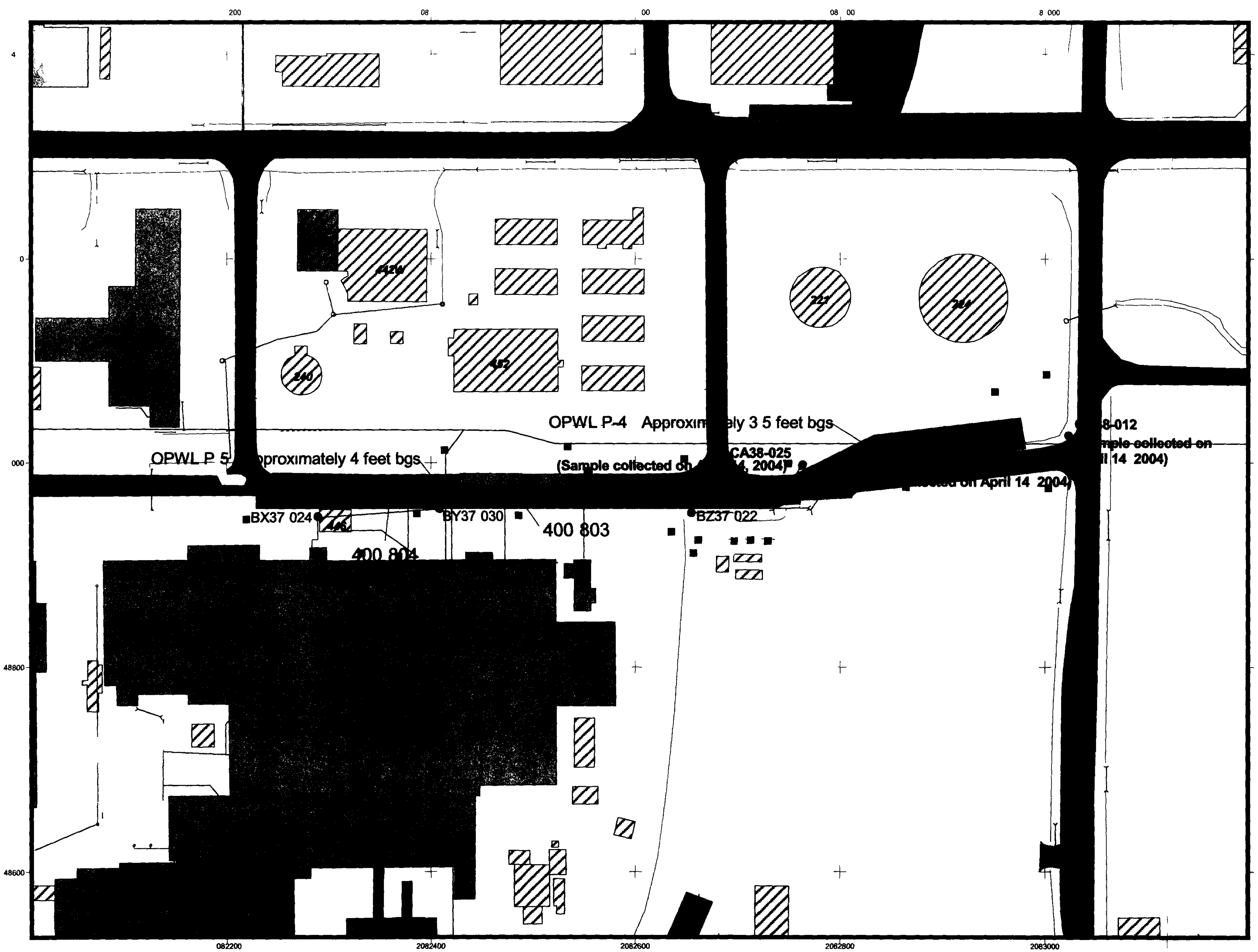


Figure 4
IHSS Group 400-4
Proposed Sampling Locations

KEY

Sampling Location
- ● Proposed Biased Location
- ● Proposed Statistical Location (will be moved in the field to target location of release)
- ■ Existing Sampling Location

PAC

OPWL

Dirt Road

Stream

Storm Drain

Structure
- Demolished
- Standing

UBC

Paved Road
- Asphalt

N W E S

75 0 75 Feet

Scale = 1 1 200

State Plane Coordinate Projection
Colorado Central Zone
Datum NAD 27

U S Department of Energy
Rocky Flats Environmental Technology Site

Prepared by [redacted] Date. April 2004

Prepared for

KAISER•HILL COMPANY

File w:\projects\fy2004\400-4\Characterization\SAP\sap 020604.apr

14